Problems With Using X-ray Films

About three years ago I began to experiment with X-ray films, as an alternative to “true” photographic film. I first did 4X5 inch and 8X10 inch negatives in my L.F. cameras. I did what is known as “tray” (or dish) development. That is after I found that a X-ray developer (Ansco-30) was too damn strong and would develop the negatives in about one minute. (*I have covered this developer experiment in a different article. If anyone want to read it = Contact me.*) That was way too fast - and I really wanted to do tank development, of a time from 5 to 10 minutes, and more than one at a time.

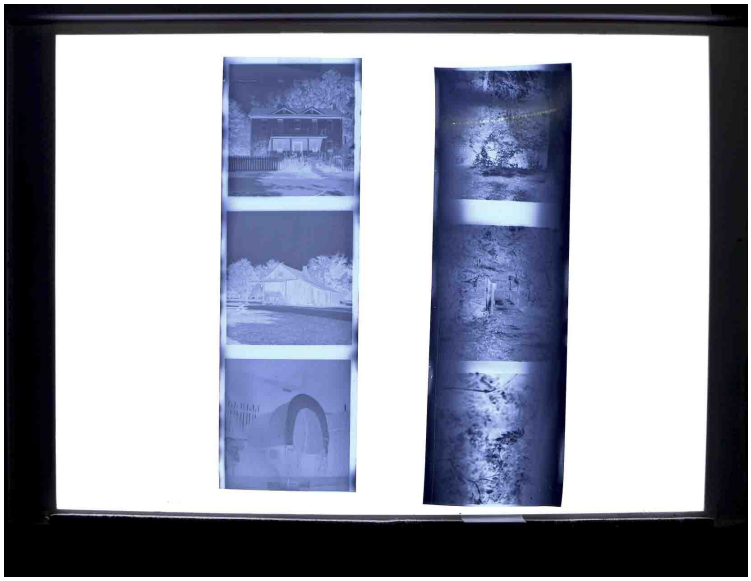
The main problem that I was having was that the X-ray films have a non-protected emulsion and on both sides of the base material. Even just looking at it, while wet, would leave a scratch, (Or so it seemed). So I used glass baking 9"X11" dishes, that have a smooth bottom. This helped, somewhat. As we must lift the film from the developer with tongs - or by hand - to the fixer, the likelihood of scratching the edges became evident. In the fixer I used an additive of Alum to make it a “Harding” type of fixer. This helped, somewhat.

Then came the realization that I needed to do Tank Development for ease of handling and cutting down the time to develop 12 negatives of a single outing of shooting. I reformulated the Ansco-30 to make it usable for 4 to 8 minutes in a Yankee developing tank. This eliminated most of the scratches. I still did the addition of Alum to the fixer as when I take them out of the Yankee tank’s “cage”, I did not want to make any marks on the emulsions. So now I was able to develop a batch on 12 in the time of a total of 30 minutes including fixation, and washing. (Drying takes about 1 hour on a “Dry-Line”. (A string line with clothes-pins to hang the film on.)

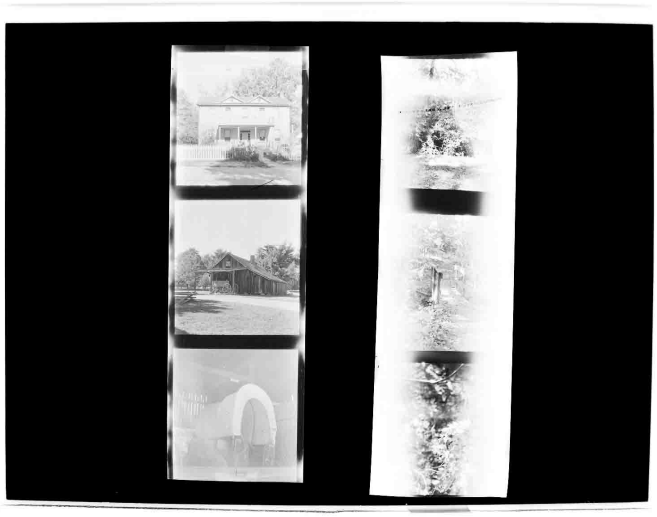
Then another idea came to mind. = Why not cut the 8X10 sheets of film into strips that may be rolled onto a 120 film spool? I did this with the Paper Negative Process a few years ago. (Photo Paper has the ISO of 3 to about 10 - so hand-holding is out of the question, and a tripod MUST be used.) X-Ray films were from 25 to 100 ISO, thus, making it usable in handheld cameras. I have a Minolta “Autocord” medium format camera that has a “mechanical stop” for each frame of negative to another. So - No Backing Paper to contend with. Problem with that was that the film MUST be loaded and unloaded in the darkroom under “safelight” conditions. (Not what I was after - as I wanted to change rolls in the field while on any shoot event.)

I first used salvaged backing papers from used 120 roll films. However - given that the thickness of the support layer of X-ray films is twice that of true panchromatic films, this overloaded the available of space of the spool. Light leaks were evident around the edges of the negatives. I then thought of how 220 roll film was constructed. 220 rolls only have Black backing paper as a leader, and not the total length of the film.

I tried black construction paper. After a few times of use the paper would tare on the edges and light leaks would be seen on the edges of the negatives. So - in that I save the plastic black opaque bags from boxes of photo print papers, I had a few of those to use as leader for the 120 rolls for the Minolta “Autocord”. I cut a little over (1/64th of an inch) so that the plastic would “ride up” on the shoulders of the spools, and thus, prevent a lot of the light leaks from spoiling the negatives.



Above one can plainly see that Light Leaks have all but destroyed the negatives on the Right set of negatives. On the Left I used the Plastic Bag Leader Strips. Much, MUCH better.



Above is an inverted to Positive of the example negatives.

Please know that these are extreme examples of the light leak problem. I chose these to illustrate the problem.

Fuji HR-U X-Ray Film = “Tri-Fold” / For Cutting to fit 120 & 620 Film Spools / 14”X36” WITHOUT Taped Joined Seams - + leftover for 35mm (ISO= 50 to 100) 1 Sheet = 5 Rolls.

In an endeavor to try to eliminate the cutting and taping together of three strips of 8X10 X-ray film, I found some large Very Large Film (14"X36") called “Tri-Fold”. It has two creases that are *almost* unnoticeable. With the cutting of the 8X10 sheets and taping them together I lost number 4 and number 8 so the total was not 12 negatives for each roll but 10. (I re-shot number 4 as 5 - and number 8 as 9.)

Test Run of Twelve Exposures of Fuji HR-U 14”x36” Tri-Fold X-Ray Film (ISO= 50-100)
No Taping Needed to Complete a 12 Exposure 120 Roll of Usable Film
(One Sheet Will Yield Five Rolls of Product Save Your 120 & 260 Spools.)

With the “Tri-Fold” I do get all twelve exposed negatives, with the usual end waste.

Here are a few positive examples:

Being that the strips are cut the size of a 120 film roll I use the tank development process. (Ansco-30/JK 1:24 - for 4 to 8 minutes depending on the temp of the solution / Water rinse for "stop" / Sodium Thiosulfate Permanganate plus 10 Grams of Alum for Fixation.)

Here is the reformulated Ansco-30/JK formula I am currently using:

Ansco-30/JK reformulated "Tank Developer Solution".

Water - at 120 Degrees F. ----------750ml.
1.) Metol ---------- 3.0 Grams. (Reduced)*
2.) Sodium Sulfite ---------- 70.0 G. (Increased)*
3.) Hydroquinone ---------- 4.0 G. (Reduced)*
4.) Sodium Carbonate ---------- 20.0 G. (Reduced)*
5.) Potassium Bromide ---------- 5.5 G. (Increased)*
– Cold water to make a Full 1 liter of Solution. (This is a STOCK solution ONLY.)

(> Add In Order of this list 1 through 5 <)

For a working solution --
Take One Part of this Stock to 24 Parts of Water. That is a 1:25 Ratio. (i.e.= 1 Oz. stock to 24 Oz. Water)
The times will vary with the temperature of the working solution, anywhere from four to eight minutes.
(20 Degrees C. = 5 minutes)

* = Readjusted here from original Ansco-30

(NOTE= This is ONLY For 4X5 Inch X-Ray Films)

X-ray films vary from each manufacture. Mammography X-Ray films are one sided and are panchromatic (meaning that they are sensitive to ALL light - even red). So this stuff must be handled in complete darkness. "Green" and "Blue" X-ray films can be handled in a safe lit darkroom. I have installed a dimmer on my LED "rope" strip that encircles my darkroom. I did this to have better control on the light emitted by the LEDs.

I encourage all photographers to be experimenters. (Just because someone says why? You can answer “Because I Want to.”) Because all artists have the need to create, make their own formulas, try something different. I know that the manufacturers have over the years, made really great products. However - I like to make my own “stuff”, my art becomes my one of a kind. And so can yours.

Read - Learn - Be Concerned.

Keep notes in a handwritten notebook - both successes and failures. Failures are the best learning we can have, all people need to stop being afraid of failure. With out it, we can not succeed. As the saying goes... “If it don’t kill ya, it makes ya stronger.”

Thank you again for reading.

May The Light Be With You.

James R. Kyle, Photographer - Saint Louis, Missouri U.S. of A.